CLAIMS

1. Method of signalling between transmitting means and receiving means wherein signals from the transmitting means are subjected by the receiving means to deliberate reflections and resulting signals are transmitted back as meaningful at the transmitting means.
2. Method according to claim 1, wherein different deliberate reflections have effects on said resulting signals that have different meanings at said transmitting means.
3. Method according to claim 2, wherein said different deliberate reflections, consequentially different said resulting signals and related different meanings at said transmitting means afford two-way signalling.
4. Method of two-way signalling involving first signalling in one direction by sending signals with certainty of deliberate reflection thus resulting signals for return related to the signals sent according to the nature of the deliberate reflection and second signalling in the other direction by varying the nature of the deliberate reflection.
5. Method according to claim 4, wherein source of the first signalling assesses what is received back corresponding to what was sent to determine the nature of the deliberate reflection thus related signalling content.
6. Method according to claim 5, wherein source of the second signalling needs only to detect what was sent as the first signalling and vary the nature of the deliberate reflection according to the second signalling.
7. Method of two way duplex signalling, wherein signalling in two directions uses a transmission and a re-transmission of the same signal energy.
8. Method according to claim 7, wherein signal format as transmitted has signal format as re-transmitted determined by deliberate reflection to produced resulting signals as re-transmitted.

9. Method according to claim 8, wherein selectively variable nature of said deliberate reflection represents re-transmission signalling.

10. Method according to ~~any one of claims 1 to 6,~~ 8 ~~or 9~~, wherein said resulting signals as received back by the transmitting means are used for checking purposes according to relationship with signals as transmitted.

11. Method according to ~~any one of~~ claims ~~1 to 6, or~~ 8 ~~to 10~~, wherein the deliberate reflections include in-phase relation with the transmitted signals.

12. Method according to ~~any one of~~ claims ~~1 to 6, or~~ 8 ~~to 11~~, wherein the deliberate reflections include out-of-phase relation with the transmitted signals.

13. Method according to ~~any one of~~ claims ~~1 to 6, or~~ 8 ~~to12~~, wherein the deliberate reflections include out-phase relation with the transmitted signals.

14. Method according to ~~any one of~~ claims ~~1 to 6, or~~ 8~~13~~, wherein the reflective signal terminations are varied to vary the deliberate reflections and said resulting signals.

15. Method according to claim 14, wherein varying of the reflective terminations is unrelated to varying form of the transmitted signals.

16. Method according to ~~any preceding~~ claim for binary signals, wherein two different reflective terminations are selectively applied to transmitted signals according to the two different binary values for data to be returned.

17. Method according to claim 16, wherein the two different reflective terminations have net high and low voltage results at reflection.

18. Method according to claim 17, wherein the two different terminations are open-circuit and short-circuit conditions.

19. Method according to claim 16~~, 17 or 18~~, wherein the binary signal forms for the two binary values of transmitted signals before reflection each comprise successively oppositely-

directed voltage excursions, and differ from each other in phase.

20. Method according to claim 19, wherein each excursion of each the binary signals forms is opposite to the corresponding excursion of the other.

21. Method according to claim 19 ~~or claim 20~~, wherein all of the excursions are to substantially the same extent.

22. Method according to claim 19, ~~20 or 21~~, wherein the binary signal forms are bipolar.

23. Method according to claim 22, wherein the bipolar signal forms are symmetrical about nominally zero volts.

24. Method according to ~~any one of~~ claims 18 ~~to 22~~, wherein each of the binary signal forms includes an associated component different from its excursions.

25. Method according to ~~any one of~~ claims 18 ~~to 23~~, wherein a signalling format including plural said binary signal forms includes an associated component additional to its excursions.

26. Method according to claim 25, wherein the associated component has a voltage medial of the excursions.

27. Method according to claim 26 ~~with claim 23~~, wherein the associated component is constant substantially zero volts.

28. Method of signalling wherein signal formats for the two binary values each have two successively oppositely directed voltage excursions and an associated component different from its excursions.

29. Method of binary signalling wherein signal formats for the two binary values each have two successively oppositely directed voltage excursions, and a component different from the excursions as associated with the signal formats of a ~~group of successive binary values~~.

30. Method according to claim 28 or claim 29, wherein the excursions are as claimed in any one of claims 20 to 23.

31. ~~Method according to claim 30, wherein the associated component is as claimed in claim 26 or claim 27.~~

32. Method according to ~~any one of~~ claims 16 ~~to 31~~, wherein the signals as transmitted and after reflection have similar signal formats and waveforms.

33. Method according ~~directly or indirectly~~ to claim 10, wherein said checking is time-related to send associated or interval components.

34. Method according ~~directly or indirectly~~ to claim 10, wherein checking makes effective extraction of reflection component from returned as retransmitted signals.

35. Method according to claim 33 ~~or 34~~, wherein checking includes timing of double excursions is checked and/or interval before or after first or second excursion and/or nominal mid-point zero-crossing and/or total extents of excursions and similarity thereof.

36. Method according to ~~any preceding claim~~, wherein transmitted signals emanate from at least one master unit and go to at least one of a plurality of signal reflective nodes typically for slave units.

37. Method according to ~~any preceding claim~~, wherein communication by a said master unit with a said slave unit involves said master unit selecting said slave unit according to reflective state thereof.

38. Method according to claim 37, wherein said communication for serially connected slave node involves alternative reflective states thereof and a series of bit signals from the master each to select or not successive slave nodes which do not pass on the first bit signal recovered even if not selected thereby.

39. Method according to claim 37, wherein said selection involves at least one routing node similarly selectable but in relation to branches therefrom.

40. Method according to claim 37, ~~38 or 39~~, wherein signals from said master unit can reach and/or traverse a slave on a router node from either direction.

41. Method according to ~~any one of~~ claims 37 ~~to 40~~, wherein an active slave or router node indicates its state reflectively.

42. Method according to ~~any one of~~ claims 37 ~~to 41~~, wherein time domain reflectometry is used by master(s) in connection with location of and distance to slave and/or router nodes.

43. Method according to ~~any one of~~ claims 37 ~~to 42~~, wherein time domain reflectometry is used by master(s) for detecting wrong routers and/or transmission line faults.

44. Method according to ~~any one of~~ claims 37 ~~to 43~~ wherein relatively large end-route signal components are used for rest ~~or other purposes~~.

45. Method according to any one of claims 37 to 43, with claim 25 or 28, wherein master(s) use strobe and reset pulses in controlling communications and slave or router units during said associated signal components and/or during gaps between bit signals.

46. Method according to ~~any preceding claim~~, wherein an in unreflective state is used along with said reflections.

47. Signalling system or apparatus for use in carrying out method according to any preceding claim.

48. Signalling system or apparatus according to claim 47 with claim 37, wherein coupling of a slave or router node to a transmission line implies a continuous conductive path therethrough along which DC or low frequency AC power can be passed along with signalling.

49. Apparatus according to claim 47 ~~or claim 48~~, including master circuitry for taking reflection components from received signals in full duplex communication mode, said circuitry affording transmission line termination at transductance that is reciprocal of transmission line impedance with direct feedback between output current and input voltage as a common resistance equating point.

50. Apparatus according to claim 49, wherein fixed ratio capacitance means cooperates with inverting voltage amplifying

means and affords a common capacitance point free of intrusions from output waveform parameters.

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